# Trees.

Trunk Cavity Treatment in Large American Elm, Showing Well Developed Callus.

FROST INJURY TO TREES — *Malcolm A. McKenzie*

SHOULD CAVITIES BE FILLED? — *Frank C. Thomas*

August 1945 — *The Journal of American Arboriculture* — 35 Cents

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*The Editors of TREES invite discussions, comments and all types of literary materials pertaining to trees and tree preservation from any person engaged either in the scientific advancement or commercial development of the field.*

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# ALONG THE WAY

With . . .
EDW. SCANLON

■ Recommended RE-READING at this time: G. D. BLAIR'S "TREE CLEARANCE FOR OVERHEAD LINES"—this is an EXCELLENT book and has proved to be VERY ILLUMINATING (joke) on SECOND READING.

* * *

■ *With the MUMPS AND PEWNOMIA to his credit as contributions from the Army, DICK ALLMAN, ex-city forster of CEDAR RAPIDS, seems to be building up a NICE HEALTH RECORD. He's at FORT KNOX —where "MASSAS IN DE GOLD, GOLD GROUND"—(mass'a gold).*

* * *

■ FORREST STRONG is co-author of a new bulletin released BY MICHIGAN STATE COLEGE, Extension Bulletin 269, "CONTROLLING DISEASES AND INSECTS ON ORNAMENTAL TREES." Well, let's HAVE ONE. (We have).

* * *

■ A renewal subscription from JOHN B. WOODRUFF'S MOTHER in BROOKLYN says JOHN is a CAPTAIN with the 10TH MOUNTAIN DIVISION in ITALY. John is GRADUATE PATHOLOGIST from NEW YORK STATE COLLEGE OF FORESTRY. Hope YOU'RE BACK in time TO READ this, Cap.

* * *

■ *In FULLERTON, CALIF., the other day, saw a nice street of GINKGOS. Was taking a picture when TWO YOUNG GENTLEMEN of about seven, pedaled by. I asked if they knew what KIND OF TREES these were, they replied "OH, THEM, WE CALL 'EM 'STINK-BERRY' TREES." WHAT A SHAME nurseries do not offer the STAMINATE FORM and obviate the ODIOUS OPPROBRIUM heaped on this SPLENDID TREE.*

* * *

■ PARK SUPERINTENDENTS and CITY FORESTERS have a terrific burden imposed by a MORONIC FRINGE of the public in the VANDALISM perpetrated on PUBLIC TREES. We would like TO PUBLISH many such STORIES AND INCIDENTS—send them in WITH PICTURES, if available.

* * *

■ *"Where have you been all my life?" WRITES CARL GRAEHLING of the TREE EXPERT CO., by the same name at HARRISBURG, PA., in sending in his NEW SUBSCRIPTION to the REVIVED APRIL ISSUE OF "TREES."*

* * *

■ STEVE BRODY, another NEW SUBSCRIBER from LYNBROOK, N. J., (Steve Brody Tree Expert Co.) should get a LOT OF PUBLICITY if he would SPECIALIZE in a certain phase of ABORICULTURE—would it be TOO CORNY to suggest — BRIDGE-GRAFTING.

* * *

■ *FRANK KARPICK, assistant city forester AT BUFFALO, is worried. Some years ago THE W. P. A. MALTREATED his "Sweetheart" tree—(a famous Beech, with LOVERS INITIALS hacked into it). Now some nit wit has de-barked it with his "MERRY OLDMOBILE." Frank's going TO FEED IT. How about some propaganda, FRANK, everyone sems to respond to THAT NOW-A-DAYS.*

■ HOW TO OVERCOME A MISTAKE! A rather NARROW STREET in SANTA ANA, CALIF., was planted to QUERCUS ILEX about 22 YEARS AGO—the trees were OPPOSITE one another. DALE GRIGGS, the park super set out a street A BLOCK AWAY several years ago, to the SAME SPECIES, but, planted them ALTERNATELY. Now they won't BE JAMMING one another. A matter of COMMON SENSE and its APPLICATION.

* * *

■ *The enterprising TREE WARDEN OF ANDOVER, MASS., Geo. R. Abbott, has published a FINE LITTLE BROCHURE. It is for THE PUBLIC, in his town, and EXPLAINS TERSELY under the title "The Rights of Trees on the Public Ways." MORE of this KIND OF MATERIAL should be issued. IT SERVES A FINE PURPOSE.*

* * *

■ The "IRONIC - BUT - SOMETHINGS - VERY - SCREWY - DEPARTMENT" makes this observation; in 1932 under the so-called "RICH MANS" party, REPUBLICAN, we had NO MONEY and FOOD GALORE. Today under the "PEOPLES" PARTY, NEW DEAL, we have PLENTY OF MONEY and NO FOOD. Aren't you folks GOING TO WAKE UP to the fact YOU'RE BEING KIDDED a little.

* * *

■ *A very NOTABLE BROCHURE has been received from MRS. ELLA C. PARMENTER of OBERLIN COLLEGE, in Ohio. It is titled "Oberlin Trees, of Campus and Town," written by CHESTER F. RALSTON. Most interesting feature is the PICTURES DATING BACK TO 1860. A FULL HISTORY of Oberlin trees, BY WHOM PLANTED and where, makes this booklet A FINE CONTRIBUTION TO THE CULTURE TREES GIVE, even to SUCH AN INSTITUTION of culture as OBERLIN COLEGE.*

* * *

■ Have been TRYING FOR YEARS to start a QUESTION AND ANSWER DEPT. in TREES—but, NO DICE. Must be a BUNCH OF SMART DUDES that read this mag—OR MAYBE they figger "WHY SHOW MY IGNORANCE, I'LL SEE THE ANSWER IN "TREES" SOONER OR LATER". Good reason, but let's try and SPEED UP EVOLUTION. I'll bet if you SAT RIGHT DOWN you could WRITE A QUESTION that would even FOOL THE EDITOR—A forum of this kind is ALWAYS INTERESTING. If everyone PITCHES IN to start it off, it will CARRY ALONG NATURALLY. Everyone WILL PROFIT if you take a MINUTE OFF RIGHT NOW—now MAIL IT.

* * *

■ *FRED EVANS, the LONE WOLF of Sacramento, among a GROUP OF INSULTS said he LIKED THE APRIL ISSUE of "TREES." "ESPECIALLY YOUR 'ALONG THE WAY' TRIPE"— Even TRIPE IS WELCOME these days, FRED. But no kidding, BOWERS AND I were looking AT PLANTS that day with PROF. McMINN. Your INSINUATION that we are wolves—IS APPRECIATED.*

* * *

■ Heard that GUY YERKES is quite ill at BELTSVILLE, MD. Hope this FINE FELLOW will soon be on HIS FEET again.

■ *Several FINE BROCHURES, that make VALUABLE REFERENCE for your files, have just BEEN RECEIVED from the makers of "FLAWN"—The F. H. WOODRUFF & SONS corpulation. If you HAVEN'T GOT one WRITE THEM (see their add for address on page 15).*

* * *

■ Saw a STRANGE TREE on a SANTA MONICA street some time ago. Couldn't IDENTIFY IT (nope, NOT EVEN ME) so finally heard from PROF. REHDER, that it was the Dateplum persimmon—DIOSPYROS LOTUS, LINN. It's a small ASIATIC TREE; is used as rootstock for D. KAKI, for dry situations. A PRETTY THING.

* * *

■ *RAY OVERTON — Barney Bartlett's RIGHT HAND MAN—collected himself a PURPLE HEART and BRONZE MEDAL FOR VALOR in the PHILIPPINES. Get out of that HOSPITAL QUICK, RAY.*

* * *

■ The situation regarding THE LANDSCAPING of most ARMY HOSPITALS is still "SNAFU," or in other words, the victim of "ORGANIZED CONFUSION." One directive emphasized the planting of FRUIT AND NUT TREES, and BERRY BUSHES—What, NO CACTUS?—but, just give those PUFFED UP BRASS HATS a chance, they'll they'll do SOMETHING AS RIDICULOUS.

* * *

■ *Might not be a BAD IDEA to write your CONGRESSMAN (if he can read) about getting some action on the planting of ARMY AND NAVY HOSPITALS. The NAVY HOSPITALS I saw looked like they had BEEN LANDSCAPED by an ENSIGN.*

* * *

■ CY PERKINS thinks the "CONNECTICUT YANKEES" rate some space in TREES. So do I CY, and if you and other GOOD LADS in that state will send me the gossip, I'LL SURE dope it up and INSULT EVERYONE I can.

* * *

■ *Anytime you are IN CALIFORNIA and want a GOOD STEAK, drive out to SANTA MONICA—Santa Monica Canyon and TED'S GRILL—the best STEAK in the NEWNITED STAKES—no pun.*

* * *

■ A car SEEN LEAVING CALIFORNIA recently was reported to have CARRIED the following sign "GOODBYE CALIFORNIA AND YOUR DAMN GERANIUMS"—not fair to the geraniums. ANYWAY, pally, they are COLORFUL AND CHEERY CITIZENS.

* * *

■ *Heard that the MEMORIAL TREES IN SANTA BARBARA (last war) are now in the capable hands of "TEX" EVANS, THE STATE HIGHWAY tree foreman, and for 18 MONTHS have been having the "BOOK THROWN AT THEM" in the way of PRUNING, SPRAYING, etc. Will take them SOME TIME TO OVERCOME the ill effects of 25 SOME YEARS NEGLECT, but if anyone can do it "TEX" CAN.*

* * *

■ KARL DRESSEL at MICHIGAN STATE COLLEGE says that he and FORREST STRONG have been having a BAD TIME with OAK AND SYCAMORE ANTHRACNOSE this year. Also HONEY DEW OF MAPLES is causing much CONCERN AMONG THE TAXPAYERS.

* * *

*LISTEN FELLOWS send in THOSE SUBSCRIPTIONS will ya—the GRAY HAIRS are GATHERING TOO FAST*

*NATIONAL ARBOR DAY — THE LAST FRIDAY IN APRIL*

---

**We are sorry this has to be the last issue this year. As explained in the April issue, the writer was released from the Navy too late to plan a full schedule. In 1946 we hope for at least four, and maybe six issues. Many thanks for the fine subscription response to the April issue. The many fine comments indicate that TREES really hit the jack-pot in April so far as readers were concerned.**

August, 1945 **The Journal of American Arboriculture** Volume 6 — No. 3

EDWARD H. SCANLON, Editor
P. O. Box 886—Santa Monica, California

"No place is complete without trees. A home without trees is charmless; a road without trees is shadeless; a park without trees is purposeless; *a country without trees is hopeless*"

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# Cordially Yours

## SHADE TREE RESEARCH ENDOWMENTS

Apparently our vast wealth of shade trees, and the tremendous investments that have been made in their planting and care, have not been the objects of much consideration by people financially in a position to do something about the problem.

Very little thought is needed to show the existence of a rather peculiar anomaly. Large sums have been contributed to foundations, and other types of organizations, for research in almost all other fields of horticultural and forestry endeavor, but, search though we may, none is recorded that would indicate the love and admiration that most people have for our many magnificent ornamental trees. The disease, insects, inferior and inadequate character traits of some of this group of trees, are legion. A research endowment that would provide ample opportunities for adequate investigation of these, and other troubles, would certainly be a most worthy contribution to future generations; and should be if presented properly, a field of philanthropy that would interest wealthy people. There are several notable arboreta in America performing yeoman service in the cause of trees; botanic gardens perform also, in the cause of lesser plants; forestry associations and agricultural stations have kept abreast, or ahead, of problems in their fields. It is only in the field of arboriculture that we find a condition comparable to that which existed about forty years ago in the research in crop plants, according to the eminent authority, Dr. Curtis May.

Certainly it is no lack of love for ornamental trees that creates this situation. Love of trees is based, perhaps almost entirely, on the admiration for species that definitely can be placed in the ornamental group. Forest trees, in the aggregate, inspire by the vast panoramas they present, but few forest individuals, with exceptions, elicit the admiration that a fall colored sugar maple or liquid-amber certainly does.

What then must be the fault? Lack of a plan; failure to present the many problems and possibilities to the proper people, and definitely a lack of aggressiveness on the part of the people in arboriculture in not more assiduously working on a plan and attempting to interest people of wealth in this very beneficial field of philanthropy.

---

## THE ARBORISTS' HORIZON

After this war there will undoubtedly be loosed on the public a mass of "paint, feather and wire" camoufleurs who will profess a great knowledge of protective concealment, from which they will attempt to glean a few honest nickels. They will probably high-pressure city governments, large industrial plants, etc., with their partial knowledge of plant material, for it will be with living materials this time that they attempt to create masterpieces as conceal-

ment from the super bombers of the next world conflagration.

Yes, we think there will be another war and that a long range camouflage program is very practicable; at least planning should be on that assumption, for example, we have the drive for compulsory military training. Good insurance if kept in hand. With big bombers costing $300,000 and up, each; with thousands of small fighter planes costing fifty or sixty thousands each, and the other astronomical sums being expended, without a murmur, for war, it is very unlikely that the big phenaglers will let many more years pass before we have another "gravy train" for them and their parasitic friends. However, in the meantime, arborists should step into the breach and plan these long range programs.

For many years now the more intelligent arborists, park men, nurserymen, and others have been discouraging the planting of "weed" trees. They are too expensive to maintain and are short lived. The "camofleur-arborist" will advocate this type of tree and here the arborist will have his fight. The public wants fast-growing trees, but they don't like the cost. It is going to be another example of "Caveat emptor" and we must protect the buyer, as well as ourselves. This type of work, if it can be worked up to any volume should be very worthwhile and profitable.

# New Fertilizer Improves Plants

*By* JOHN PARKER

Doubts and objections, based upon old traditional methods, are often expounded when new theories, ideas, and practices are advocated. However, the writer, having experimented with many and various methods and materials for both regular and supplementary nourishing of plant life, in particular as regarding shrubs and trees, has after several years trials, discovered a particular product known to the market as LIKWID-GRO which, when applied in sprinkling form, on the foliage, gives definite evidence that the nutrients are absorbed through the leaves.

It is known that many shrubs are deprived of sufficient food from the soil due to root competition and in these cases such a method has proved most gratifying. It has been suggested that one might burn the foliage by such method. However, there is no more danger of burning the foliage than there is of destroying the roots in a similar manner when the simple directions as to strength of the solution are followed.

This product, LIKWID-GRO, is an organically derived formula, carrying a 10-5-5 constituency. It also contains hormones often carried in organic derivations. This has been evidenced in the invigoration of the cells and the rich depth of color imparted to both foliage and flowers of the plants treated in this manner. The simplicity and speed with which one can apply LIKWID-GRO by the use of a siphon- applicator attached to the faucet through the hose makes this system doubly desirable and economical in these times of labor shortage. Whether applied to the foliage or in the soil the elements are immediately available to the plants.

**THE COVER PICTURE.** We think it would be interesting to have some opinions on the cause of the wound in the tree pictured on this month's cover. The bark formation and lean of the trunk present some interesting possibilities.

# *Sherman Was Right--A Lady Skinner*

*Photo courtesy New York Botanical Garden*

*Mollie Pearsall, a gardener at the New York Botanical Garden, pruning a tulip tree. Better tighten up that line, Mollie!*

## Tree Trimmer, 101, To Wed Widow, 62

RACINE, Wis.—The fancy of James A. Cooper, retired tree trimmer, lightly turned to thoughts of love today, in evidence of which he displayed a license to marry Mrs. Julia Nestphal, 62-year old widow.

His own age, Cooper told the county clerk, is 101 years.

(Attention Bob Weakley!)

The Japs saturate ship timbers with whale blubber to protect them from insects. Then our Navy spoils the plan by sinking the ships before the insects can do any harm, anyway.

## New Solution Aids Camouflaged Trees

CAMP EDWARDS, Mass.—Harvard University's scientists have develped a new solution used by army camouflage units to prolong the life of trees which have been chopped down and set up again.

The camouflage school reports success with the new product which is sprayed on trees which are then placed in cans containing water. The process saves the trees from drying up after being cut down and makes them appear lifelike in from two to six weeks.

# Redeployment Halts 21st Conference

Heeding the call to reduce travel to an absolute minimum to aid in the vast problem of redeploying troops, officials of the National Shade Tree Conference have cancelled the twenty-first annual meeting, which normally is held each August. This is the second wartime conference called off in answer to the government's request to patriotic American that travel be restricted. The Proceedings will be published as usual, and it is sincerely hoped that in 1946 there will be no war so that once again this valuable meeting can be resumed and that all absent members will be back on deck.

Trees...

# George Perkins Clinton

## *Famous Arborists Series No. 2*

*By* RUSH P. MARSHALL
*U. S. Dept. of Agriculture*
*Yale University*
*New Haven, Conn.*

Specialization seems increasingly the order of the day. Under it the moon of the arborist has waxed. That of the general botanist has waned to a phase that those savants who seem to see all and to know all in the world of plants now near extinction. One of the last of this school who aided so materially in laying the broad foundation on which modern aboriculture is built was George Perkins Clinton.

He was born at Palo, Illinois on May 7, 1867. The boy was redheaded and fond of fighting. School, and helping both at home and with the newspaper edited by his father, kept him busy. He not only learned to work, he learned to like work, and to perform it with energy and enthusiasm.

In 1886 he entered the University of Illinois to study botany. Following his graduation in 1890 he was appointed Assistant Botanist at that institution. Four years later the same University granted him a master's degree. He later studied at Harvard University, receiving his doctor's degree in 1902.

During the same year he became Botanist of the Connecticut Agricultural Experiment Station. In this capacity he served illustriously during thirty-five years. A part of this service of particular interest to arborists is that he acted from 1919 until his death on August 13, 1937 as one of three members of the highly regarded Connecticut Tree Protective Examining Board. It was the first body of its kind to be organized in this country.

The narrow confines of the State did not restrict Clinton's botanical activities. At the request of the United States Department of Agriculture he studied diseases of coffee in Puerto Rico during 1904. In 1909 he was sent to Japan to collect and bring back parasites of the gypsy moth. He studied the chestnut blight in the South, and the willow scab in Canada, and the Dutch elm disease in Europe. On three occasions he collected fungi in Europe.

In addition to his numerous duties at the Experimental Station, he lectured on forest pathology at Yale University from 1915 to 1926. He was an excellent teacher and his long years of research and field experience gave him a wealth of material from which to draw. He seldom referred to notes while lecturing. To inspire the footsteps of his students he sometimes turned to four niches that were indelibly carved in his memory. Therein were placed, as gods, four mortals. These were the men who had inspired or best schooled him for his life work. Their names are illustrious: M. B. Waite, T. J. Burrill, W. G. Farlow, and Roland Thaxter. When he spoke of them they seemed to step from their niches and walk and talk with him. However real he made them, he never lashed at them with the whip of criticism. That whip was reserved for chastening mortals. For his venerated quartet he outpoured only devotion. Is hero worship an infectious malady? Returned to their niches, the four gods seemed to the eyes of adoring students to merge clearly into one composite god: Clinton himself. To the students he was more than a teacher. He was a friend, a brother and a father as well.

*Photo courtesy the Author*

*The late Dr. George Clinton Perkins, in a typical pose, just before starting out on a field trip. These trips were one of Dr. Clinton's few sources of relaxation.*

To the farmers Dr. Clinton had especial appeal. He solved many plant disease problems for them. Whenever possible, rather than answering their inquiries by mail, he visited them to look over their difficulties in the field. Control studies were also made largely on the farms where the disease occurred. Such close contact made for mutual understanding.

If he called loudly for any member of his small but exceptionally able staff, the summons was obeyed without resentment. All knew that however harsh the sound, it came from a mouth whose corners were upturned in a smile. They served his every need gladly.

No man was ever more worthy than was Dr. Clinton of the universal esteem and affection with which he was regarded by all who really knew him. Unfortunately, casual acquaintance sometimes left a less favorable impression. In part this was due to the fact that he was modest to a fault. Dr. William L. Slate, Director of the Station, once said of him, "He was the most self-effacing man I have ever known." The mere suggestion that the newspapers give publicity to any of his numerous contributions made him shrink into his shell and

*(Continued on page 12-13)*

# Should Cavities Be Filled?

*By* F. C. THOMAS
*Thomas Tree Experts*
*Greensboro, N. C.*

The writer does not presume to be an authority on cavity treatment but rather, one who is anxious to learn all he can on the subject, and the following points that have been jotted down are not presented as irrefutable evidence that cavities should be filled but rather as thought provoking aspects of the question, which after lengthy contemplation on the matter (fifteen years to be exact), leaves me at a loss to understand what prompts certain responsible parties who may even be rightly considered as authorities on the subject to advocate, practice and presumably believe in the open method of cavity treatment.

Since this discussion is primarily to decide whether to fill or not to fill a tree

*Photos courtesy the Author*

*The author touches up a finished fill on a Willow Oak* (Q. phellos). *1941.*

cavity, no consideration will be given to the several filling materials that could be used for that purpose. To begin with, one of the largest and oldest tree companies in existence is of the oponion that it would be excellent practice to excavate and fill all sound pruning wounds over six inches in diameter. In view of the fact that from time to time various authorities on the subject of wound dressings have admitted that the perfect pruning compound has yet to be discovered, and since most of the readers of this magazine are men with a background of practical experience in tree preservation work it seems rather unnecessary to point out that due to the fact that such wounds check open badly as the wood seasons, it is impractical and well nigh impossible to protect them effectively with a coat or two of paint.

From close observation in the past I have noticed that real large pruning wounds of twelve or more inches in diameter rarely callus over completely before active decay has set in, not withstanding regular and conscientious policing of the work. Therefore it follows that the larger the wound, the greater the urgency for sealing it quickly and permanently.

Seemingly it would be nothing short of common sense to remove a little of the sound healthy wood and seal the wound with a filling rather than continue repainting it and eventually be faced with the necessity of cutting away several times the amount of wood to get rid of the decaying tissue that would have been necessary if the wound had been filled to start with. So much for filling undecayed wounds.

Now let us consider a situation where the cavity already exists, and when the decay has been removed the tree is left decidedly weakened. In such a case we are faced with the problem of restoring to the tree as much of its structural strength that has been lost as is possible. This of course can be achieved to a certain extent through the use of brace rods and it can often be augmented considerably by strategically placed cables, and to a still greater degree by installing a filling in the cavity.

This filling incorporates several very important advantages, aside from the fact that it locks the brace rods and the tissues of the tree into an integral unit, it offers the advantage of providing the work with a more sightly and professional touch than would be the case if the cavity were left unfilled and the brace rods visible like ribs showing through an opening in the hide of a decaying animal.

However, to my mind the most important feature of all lies in the fact that nature seals a scientifically filled cavity in the shortest possible time. In most cases within a single growing season as the accompanying pictures illustrate. To enlarge on this point a bit let us suppose that in driving along a road we come to a deep ravine where the road forks. If we go to the right we can cross over on a bridge, if we go to the left the road leads down the bank and across the stream, then up the opposite bank. Which route is the quickest? Across the bridge, of course.

This example is paralleled by the problem of whether to fill or not to fill a cavity. As a rule when the decay has been chiseled out, a good sized hole is left in the wood. This hole might be likened to the above mentioned ravine. When the open cavity technique is used, the roll of healing callus spring from the exposed cambium at the edges of the wound must of necessity travel down the sides or walls of the cavity and across the bottom, whereas if the cavity were filled properly, the healing callus would have but a fraction of an inch to travel before all of the exposed wood face would be covered and permanently protected against insect and fungus attack.

It would appear that in many cases open cavity technique could hardly afford

*Willow Oak in 1943 showing splendid callus growth that has sealed edges of filling.*

the desired results under the most favorable conditions. Let us suppose that a crotch has split. Of course in some instances the parts can be drawn together if caught soon enough after the damage occurs and if the bark is traced properly and the tree is young and growing fast, the wound might heal over very nicely with no perceptible ill after effects. Of course since there is no way

*(Continued on page 14)*

# Utilities and Trees Can Harmonize

*By* K. W. PROCTOR
*Malden Electric Company*
*Malden, Massachusetts*

(Paper read at annual meeting of Massachusetts Tree Wardens and Foresters Association).

This is the first time that I have been privileged to attend a meeting of this organization; therefore, I am not too familiar with the programs of previous years and feel a certain loss of perspective. For the purpose of acquainting myself with the business of your previous meetings, I have read copies of papers presented last year and found them to be exceedingly interesting. You are to be complimented on the excellence of your programs, the care with which your pappers have been prepared, and the rounding out of your programs.

Judging from recent papers, you consider the effect of the conflict which exists between trees and various utility services to be an important one; and rightly so, I believe. This conflict *does* exist, and unless tree wardens and utility engineers work together in closest accord, both trees and the utility service will suffer. In order to effect the cooperation indicated, both the tree warden and the utility representative must view the problems presented by this conflict from the same standpoint, that of a public servant.

There is only one reason why you gentlemen are tree wardens and that reason is that the public who make up the communities of this commonwealth want trees. By the same token, this same public wants paved streets, curbstones, sidewalks, gas service, telephones, fire alarm and police signal systems, and electric service. All of these demands conflict to some extent with each other. The installation of curbing, paved streets, gas pipes, sidewalks, and wires adversely affect the shade trees on our streets, and it is the common problem of all agencies representing these services to work in close accord with each other that the amount of detrimental interference may be minimized. We have all seen evidence which shows that if this conflict becomes serious enough, one service or another is crowded out, and unfortunately, the public has made the decision that usually the trees go first. If you doubt this statement, look at pictures of the business areas of our New England communities forty years ago and compare them with pictures of the same streets today. You will see that street construction, sidewalk development and commercial building have crowded out first the trees, and then many times the overhead pole lines. I do not bring this matter to your attention in order to add to the sorrows of any ardent tree lovers that may be among you, but to point out that the tree warden more than anyone else should be active in fostering an effort for cooperation with the representatives of the other public services. In effect, all public servants who use the city streets are in the same boat, and as the boat becomes crowded, the people who are most likely to go overboard are the ones who should be leaders in an effort for an orderly seating arrangement that will allow room for all.

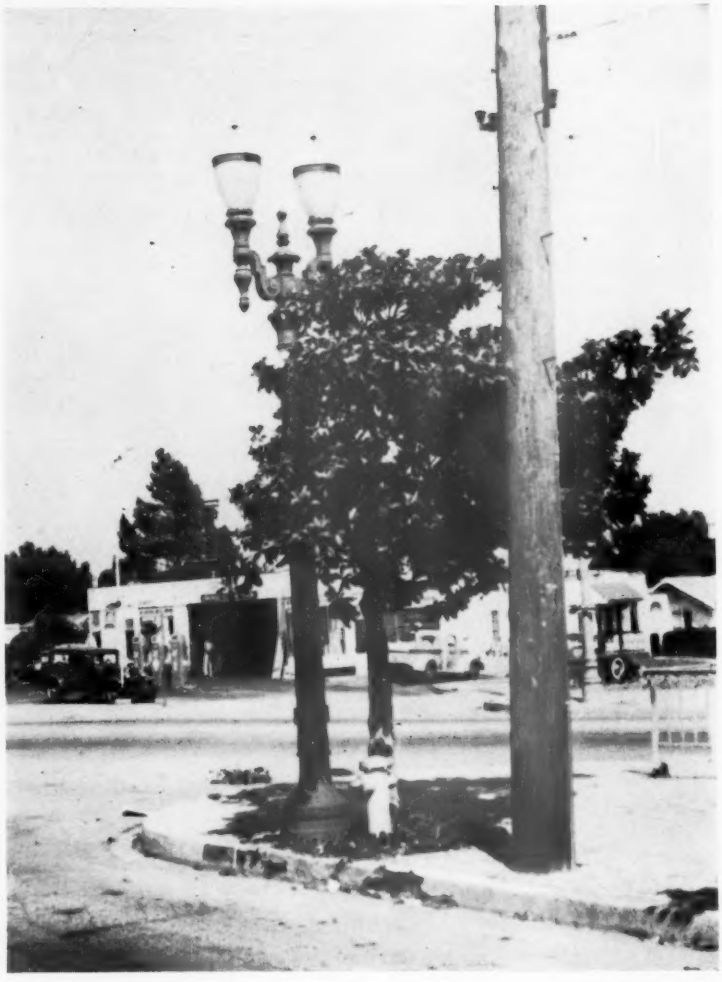

Photo by TREES

*Complete utilization of space! This is an example of a tree planted in the wrong place—on a corner, and too close to other utilities. The best interests of all are seriously endangered by this conflict between static and living objects.*

The most obvious solution to this problem of overcrowding and interference is to enlarge the boat; in other words, to increase the effective width of the street. As has been indicated to you previously, this is done by planting the new trees back from the curb line on the abutters' property. This scheme has many merits. It very materially increases the soil feeding area by removing roots from under the sidewalk and street, which are sealed against moisture with paving, and placing them under a natural soil surface. Roots would not have to be cut when installing curbing or sidewalk paving as is now the case. Electric wires and city fire and police wires would require only slight trimming if any at all. Trees would not be subject to traffic injury as they now are when located at the curb line.

However, we must recognize that

there are many cases where it is not feasible to locate trees in the lawn spaces and there are some objections to this practice. In many cases the houses are set so close to the street line that tree planting between the house and the sidewalk is impractical. Perhaps your organization can bring pressure to bear on Planning Boards, Street Commissions, or builders so that future houses will not be crowded close to street lines. I presume there may also be some objection due to the fact that it is difficult to grow lawns under shade trees. Nevertheless, we should make use of this idea wherever possible because the advantages so far outweigh the disadvantages.

I believe there are further possibilities of cooperation and planning which can be developed to the mutual advantage of both the utilities and the shade trees. Selection of kinds of trees according to the space available offers very definite possibilities of reduction of interference.

In the high class residential sections, where streets are fairly broad and the setback of houses is appreciable, a tall, arching tree could be used, perhaps elms or oaks. These trees should be planted on lawns in an area of this sort and hence the utilities' lines will not interfere with the trunks or bodies of these trees and the foliage would be above the utility lines. In a planned ararngement of this sort, the utilities would only have occasion to interfere with trees to the extent of assuring themselves that dead wood or unsafe limbs over the lines were removed.

In other residential areas, where the houses are closer to the street lines, a different solution to the problem must be found. In these cases coordination of planning between the foresters and the utilities is again the keynote to minimize interference. I believe that the forester on his part could select types of trees that are naturally small and in conjunction with the utilities work out a plan to trim and shape these trees while they are young so that they will never require major cutting to keep them below the utilities' high voltage wires. If you can work out such a program with your local utility representatives, perhaps they in turn will be able to justify assistance through adopting a policy of using forty-foot poles as the minimum height in these districts. Just how much can be done with the idea of selecting tree species and training them below utility line levels will have to be worked out primarily by you gentlemen who are tree experts, while we of the utility are not. We know that the Japanese maple is a small but very beautiful shade tree which never grows tall enough to seriously interfere with high voltage wires. It has the disadvantage of being expensive. The Norway maple, while taller, could probably be trained so that line clearance need never involve heavy cutting or tree damage.

I understand that work is going on toward the development of dwarfed or stunted trees. This may lead to a wide range of selections.

This idea may raise the objection that trees, to be beautiful, must be allowed to grow to their natural size and shape. My answer is that a small tree properly trimmed to a symmetrical shape is far more pleasing than a tall one of grotesque shape because of heavy trimming. It seems to me that selection of species and care in shaping of trees as they grow would eliminate the need of heavy trimming. Again let me repeat that a program of long range cooperation between utilities, tree wardens and foresters, involving selection and training of trees can eliminate harmful cutting of the trees, and improved line clearance, and yet not increase costs.

Every so often somone urges the installation of underground construction as a cure-all for tree damage and elimination of overhead distribution troubles. Mr. Elmer, in his paper last year, pointed out that the cost of underground construction is excessive and reflects upon the public in rates ;the operating record of U.G. construction of distribution lines indicates that service reliability improvement is doubtful and the abutters' cost of the U. G. run on his own property builds up a serious hurdle for this type of construction. It has been our experience also that more damage is done to trees by cutting of their roots to install an underground conduit line than ever was done by proper trimming. Installation of cheaper types of U. G. construction, such as trenchlay or parkway cables without conduit protection, have poor operating records and are hard to repair when they do fail. The most difficult line to repair on our system after the hurricane was an all underground street lighting circuit. You would normally think that any construction placed underground would be free from tree or hurricane troubles. Before we could restore this particular cable to service, we repaired seventeen breaks in a space of seven hundred feet caused by the cable being broken where trees were uprooted.

Another phase of the tree and electric line interference problem is the interference of trees with street lighting. I notice that your program states that this subject will be discussed by another speaker so I will not comment on it other than to say that the conflict does exist; that it can be a very undesirable one; and once again I believe the best remedy is to establish closer cooperation between the parties planting trees and the agencies who determine the locations of the street lights. If planned cooperation between these agencies can be established, I feel confident that we can have both shade trees and proper street lighting.

In summarizing, let me point out that the thoughts expressed in the previous paragraphs of this paper lead us to the following conclusions:

Until now the problems presented by conflicts between trees and other public service agencies have been handled on a day-to-day basis; very little has been done about alleviating the conflicts until they have occurred; then they have been remedied by whatever method seemed to be expedient for the case at hand. This remedy has been at appreciable cost; of varying degrees of effectiveness and only temporary.

We should look for a better answer to our common problem; one that is based on minimizing the tree and wire conflicts for the entire life of the tree rather than for one or two growing seasons; an answer based on a common understanding of planned space reservations for trees and utility lines. Such a plan cannot be possible unless it is based upon close cooperation between the foresters and utility representatives. I solicit your consideration of an earnest effort to establish and foster such a program of close cooperation.

## City Gives Tree Course

CLEVELAND—Cleveland is determined to regain its prewar title of "Forest City." Arthur L. Munson, city properties director of the nation's sixth largest metropolis, has announced that men interested in tree culture will be offered 88 1-2 cents an hour while they are learning.

## "Deenate"

The Du Pont Company announced recently that the trade-mark for its agricultural insecticide containing DDT is "Deenate," and that compounds containing the powerful war-developed pest control product will be ready for fruit and vegetable growers as soon as reduction of military demands will permit. DDT ouput is now confined to experimental and military uses.

The announcement pointed out that DDT in pure form is not efficient as an insecticide. It has to be combined with proper carriers for the particular job to be done.

## Elms Planted In 1845

YARMOUTH, Me.—Hundreds of stately century-old elms that line Yarmouth's quiet streets are the result of one day's work. May 1, 1845, was proclaimed a holiday in Yarmouth and all the men and boys went into the woods and dug up elm saplings which they transplanted.

# Frost Injury To Trees[1]

## Cold Weather May Initiate or Supplement Tree Damage

MALCOLM A. MCKENZIE

*Research Professor of Botany, Massachusetts State College, Amherst, Mass.*

Low temperatures cause a variety of obvious injuries to many kinds of trees and may be associated also with some obscure disorders. Frosts occur in autumn as early frosts, in winter as winter frosts, and in spring as late frosts. Some trees, like locust, normally continue to grow until shoots are frozen; others, like elm, may be easily injured by early frosts unless hardened by alternating near freezing with somewhat higher temperatures. All parts of trees, foliage, blossoms, buds, roots, branches and the trunks may be injured by frosts according to the season and other conditions.

As a result of frost, the cambium or growing layer under the bark may be killed or may be altered to produce a so-called frost ring of variable but characteristic features. According to the degree of cold, young stems may be killed around the entire circumference or partially girdled by the occurrence of cankers. In spruce, if frost is not too severe, damage may be limited to the formation of large resin cavities. In sycamore and some other hardwoods, cold causes shedding of cork bark without evidence of serious injury. Frost cracks in both the conifers and hardwoods occur commonly at the base of the trunk and may extend up the trunk several feet. A loud report often accompanies the extension of the crack. Cracks may be closed with callus growth in warm weather, but may be subject to repeated opening under appropriate conditions of recurring cold or wind. The "frost rib" or ridge seen commonly on tree trunks is the result.

Penetration of ground by frost to a great depth is widely recognized as troublesome. But under less clearly defined conditions frost may be only a factor, although perhaps a determining one, in a sequence of developments. Sudden and relatively severe cold after a warm period in autumn may perform injury on tender tissue. Similarly, damage may occur on soft growth in fall accompanying heavy application of fertilizer. Low vitality following attacks of fungus diseases and insect pests or unfavorable growing conditions, according to reports, may predispose trees to frost injury. Conversely, fungus or insect attack may follow primary frost damage. Other conditions favoring frost injury include scanty soil covering, lack of organic matter, light mulching, insufficient snow cover in winter, and exposure to high winds.

In the spring of 1944, Massachusetts was subjected to a damaging frost on May 19, this being the second time in 37 years that extensive spring frost injury to trees has occurred. At Amherst, the maximum temperature was 85 degrees on May 17. The following day the highest temperature was 58 degrees and the lowest temperature the morning of May 19 was 30 degrees. Lower temperatures were reported in some parts of the State. Hardwoods were severely affected. In valleys, entire trees (Fig. 1, photographed June 6, 1944) were defoliated, while on higher ground damage was restricted to foliage of lower branches (Fig. 2, photographed June 6, 1944). Although frost was very destructive of foliage, affected trees produced new leaves later in the season. In Figure 3 (photographed September 18, 1944 and Figure 4 (photographed September 18, 1944) the trees shown in Figures 1 and 2 have "recovered." Many fruit trees were severely injured, and

*Fig. 1. Foliage damage caused by late frost on May 19, 1944. 1. Sycamore, 2. White Ash, 3. Sycamore, 4. Butternut, between 3 and 4 Hickory. Note higher elm foliage at at extreme right which escaped serious damage.*

*Photos courtesy Massachusetts State College*

*Fig. 3. Same as Fig. 1 after frost damaged leaves were replaced by new foliage.*

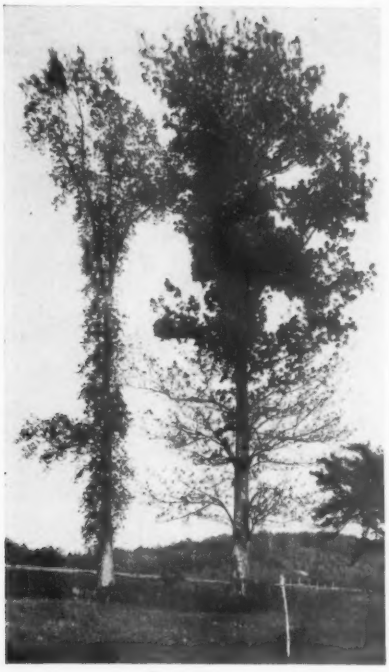

*Fig. 2. Frost damage limited to lower part of Pignut tree.*

the year's peach crop was decimated. Tender opening growth of small conifers was killed in such a manner that later in the season trees showed symptoms suggesting insect infestation and in some cases fungus infection.

Silvicultural studies have indicated certain sound practices for control of frost injury in forests. Grassland may be avoided for planting of certain species. Protection by overstory growth may be given seedlings which are most likely to suffer damage. Some trees are recognized as frost resistant and may be used appropriately in low pockets where frost is expected. Racial differences within species may be important and trees may not survive as well, other things being equal, if submitted to an average summer temperature lower than that of parents. Repeated annual subjection to late frosts is known to result in stunted, bushy growth of some conifers and tree selection practices and protective measures are advisable if frosts are expected in an area. The arborist already has means of protecting trees not feasible for the forester, such as the use of mulches, shields and covers. Whether any of the methods of the forester have value for the arborist may merit some study.

1. Contribution Number 561 of the Massachusetts Agricultural Experiment Station.

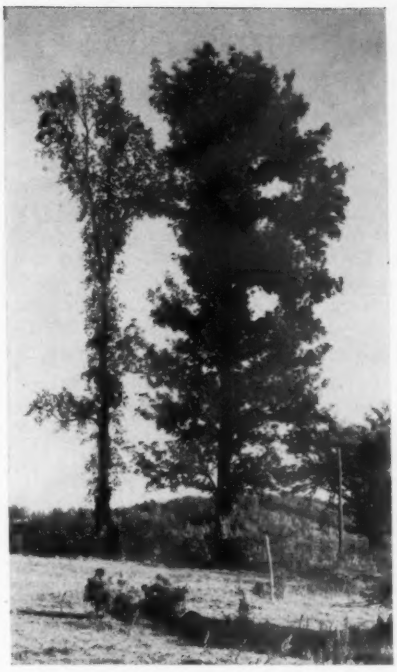

*Fig. 4. Same as Fig. 2 after frost damaged leaves were replaced by new foliage.*

# The Frost of April 23, 1945

*By* STANLEY W. BROMLEY
*Bartlett Tree Research Laboratories*
*Stamford, Connecticut*

On the morning of April 23, 1945 many of the northeastern states were visited by a killing frost the fullest extent of which is yet to be felt. The freezing of tender leaf tissues and blossoms was especially serious following the lush growth from the unusually warm and early season. In Connecticut June weather was experienced in March.

On the grounds of the Bartlett Tree Research Laboratories, North Stamford, Conn., the thermometer registered a low of 24° F.

From the Weather Bureau, United States Department of Commerce, Washington, D. C., it was learned that Worcester, Massachusetts and Wilmington, Delaware both recorded a low of 29° F that morning indicating the extensiveness of the area involved in the frost.

The following trees on the laboratory grounds showed all the new growth to be blasted. Chinese Chestnut, Bartlett Chestnut, Heartnut, Kentucky Coffee Tree, Honey Locust, Kolreuteria, English Walnut, Mulberry, Catalpa, Ginkgo, Black Walnut, Pecan, Sycamore, Ash, Tulip Tree, Tupelo, Japanese Maple, Chinese Cork Tree, Chinese Scholar Tree, European Tree Alder, Wisteria, Maackia, Oriental Oaks, Oriental Ash, Magnolia and Holly. The new growth on the following hedges and shrubs was frosted; Yew, Andromeda, Barberry and Forsythia.

In the case of large trees, many Pin Oaks showed the leaves on the lower half of the tree blasted while the top escaped. No frost injury was noted on sugar maple or American Elm, although expanding buds of slippery elm were blasted.

The effect on developing fruit was varied. Most of the cherries seemd to come through with a light set of fruit. In the case of different varieties of the peaches, one tree showed all the calyces blasted while the next tree developed a light fruit set. A considerable percent of the apple set was frosted—more seriously in the lower portions of the trees than near the top. A complicating factor in the frost damage were the high winds of a few days previous which had a desiccating effect in drying out tender leaf tissues. Along the Sound at Stamford there was very little frost injury as the temperature here was about 45° F in most places. The grounds of the Bartlett Tree Research Laboratories are located about eight miles north of the Sound with an elevation of over 400 feet. There is frequently a spread of 10° between conditions here and on the Sound.

## Maryland Holly Society Formed

Greatly increased interest, and activity, in the growing of Holly for ornamental purposes has led to the call by Mr. H. W. Dengler for the formation of the Maryland Holly Society.

Mr. Dengler is Extension Forester at the University of Maryland.

Some of the objectives for the Society are: to promote research in the various cultural and physiological aspects of growing Holly; to locate, evaluate, select and designate superior clones, selections and/or named varieties of Holly; to investigate and to promote the wise use of growing Holly on lands unsuited to arable crops.

Interested persons may contact Mr. Dengler for more details, at College Park, Md.

# Rare Yellow Magnolia Recorded

By Edward H. Scanlon

Magnolia cordata, Michx., is a medium sized tree of the southern woods that has too long remained a 'wall flower'. It has yellow flowers, is hardy as far north as eastern Massachusetts and is not large. Its ultimate height can probably be placed at about 35 to 40 feet. In form (fig. 1) it is ideally suited for small gardens, parks and narrow streets. It flowers when only 2 to 3 feet tall.

Recently the South Carolina Forestry Department discovered the tree pictured here (fig. 1) growing on a vacant lot in Columbia, at 330 Edisto Ave. Previously, through the efforts of C. H. Schaeffer, Associate State Forester, a tree on the farm of F. M. Monts, near Blythewood, S. C., was the only specimen on record, but later the larger tree in Columbia was found. The Monts tree is only 12 feet high while the Edisto tree is 25 feet tall.

For many years this beautiful tree was lost, so far as specimens in the wild were concerned. It remained in this category just as the *Franklinia* still does, until 1913 when it was rediscovered as a wild plant by L. A. Berckmans (1). According to Browne (2) it was introduced into England in 1801 by John Lyon. The original introduction was still alive in 1846 in the nursery of Messrs. Loddiges at Hackney, England, and had attained a height of about 15 feet.

Principally because of its yellow flowers, it is hoped this tree will receive trials in many locations far removed from its native Georgia and South Carolina. The State Forestry Department can render a fine service by collecting all available seed and disseminating it to all interested parties, who in turn should report, from time to time, on the progress of the new plants to the Forestry department. This should provide some worthwhile data as well as a valuable flowering tree to the gardens, parks, and streets of America.

Photos by Carl Metz

*Fig. 1. General form of the yellow-flowered Magnolia. This tree is 25 feet high and is growing in Columbia, S. C.*

*Fig. 2. Upper leaves, held by Nan Schaeffer, a charming young Southern belle, are from the crown of the tree. Lower leaves, right hand, are from sprouts at base.*

(1) Manual of the Trees of North America. C. S. Sargent.
(2) Trees of America. D. J. Browne.

## Famous Arborists

*(Continued from page 6)*

mumble "publicity hounds." To him these were the most damning words that could be used as descriptive of a man of science. By the same token he sometimes tried to hide his religious nature, the nobleness of his character, and the kindness of his heart by assuming a case-hardening entirely foreign to his true personality.

His love of arguing all subjects from a minority viewpoint tended strongly to heighten the illusion and to cloak the superficiality of this disguise.

Sometimes the argument was entered into playfully; sometimes with the same pertinacity that a bull dog grips the throat of an adversary. It was seldom possible to tell whether he spoke seriously or in jest. In either case he fearlessly pointed out with frankness, rather than with tact, all that he believed to be faults in his opponent's views.

Dr. Clinton was a man of great energy. The routine service work done by him in determining material from the field might well have occupied the entire time of any ordinary worker. Over and above this he made many critical mycological determinations for experts the world over. In spite of these burdens he always found time to conduct an enormous amount of research himself, and to supervise that conducted by his associates and students. Confronted by any task that seemd certain to exhaust even his endurance, he whipped himself and finished the race in the spurt demanded of his highly nervous body by his indomitable will.

The energy of the man was well displayed when he collected. He knew exactly where to go to find whatever he sought. Having arrived on the site he seemed to draw fungi from thin air, much as a magician draws rabbits from a hat. However poor the collecting, it was only a matter of minutes before he had everyone who accompanied him loaded down with his specimens. When collecting he scorned special field attire. He wore an old business suit. No vasculum hung around his neck. A pocketful of paper bags, a pair of pruning shears or a stout knife, and a hand lens were the only equipment he carried. The accompanying illustration (Fig. 1) shows him as he was leaving his car to begin collecting. Once engaged in this pursuit, such trifling matters as time and space ceased to exist. Since he was especially fond of working dense forests, he had to be watched closely or he would get lost. No one who had ever previously accompanied him on one of these jaunts expected to arrive home for supper much before midnight.

The youthfulness of the man was amazing. His slight but wiry figure never became pot-bellied or bent. His thick thatch of curly, dark chestnut hair showed no grey. The buoyancy and enthusiasm of youth displayed itself in his thinking, his speech, his movement, and his smile. He never lost his splendid sense of humor. It seemed to keep him young. He never outgrew a boyish craving for sweets, and consumed enormous quantities of sugar in the form of candy, ice cream soda and rich desserts.

The man was generous to an extreme. He was generous with his time and his money. He was generous to his family

and to the man on the street. He loved to really live well and to see the other man live well.

Many of Dr. Clinton's scientific contributions were mycological, or were in pathological fields not directly related to trees. Diseases of such Solanaceous plants as the potato, tobacco, and tomato interested him greatly, especially the blights of these plants caused by the fungus *Phytophthora*. He was the first to obtain oospores of this fungus in pure culture. His greatest interest was in the smuts. With him they were a lifelong study. On this group he was one of the world's leading authorities. Since smuts make no problem for the arborist, we are more interested in his studies of a closely related group, the rusts, which cause much damage to trees.

Although firmly convinced in his own mind that fungi were a more important cause of plant troubles than were insects, Dr. Clinton seemed almost inconsistently loathe to actually point an accusing finger at any specific fungus and term it definitely a parasite. If the entomologist would not take upon his broad shoulders the burden of responsibility for an unknown plant injury by claiming it caused by some associated insect, Dr. Clinton turned scrupulously to exhaust the possibility of physiological or mechanical causes. Most carefully of these he weighed the possibility of winter injury. That this led to an increased accuracy of his scientific findings and carried him over many a pitfall is not to be doubted. Well might this procedure be emulated.

This system, however, was not infallible in the case of chestnut blight. The disease swept the East. No established means of rational pathological control were known to use against it. The causal fungus was not immediately recognizable as an introduced parasite. In fact, it was so closely relateed to certain rather inocuous native forms that time was required to even develop a technique that would differentiate the species. Our best pathologists and mycologists worked jointly to put together so difficult a jigsaw puzzle. Dr. Clinton reached for a piece and threw it into place. To him, and to many others, it seemd to fit. It was his favorite piece—"winter injury." He did make some concession by scratching out that name and writing "the effect of weather." Had that single piece been placed by a less skilled hand, it might much sooner have been rearranged and the puzzle completed. Even with Dr. Clinton making it, the play did not go unchallenged. Federal experts opposed it bitterly, and eventually proved that they were correct.

Severeal years passed. Personal feelings still ran high. They fairly throbbed when Dr. Clinton tried his skill on another imported puzzle—white pine blister rust. In so doing he had scooped his opponents by demonstrating that its infection of pines was initiated through leaves rather than stems. The scores were even.

Dr. Clinton's last major contribution of especial interest to arborists was his well-rounded study of the willow scab. As was true of much of his investigation, this work was performed and written jointly with Dr. Florence A. McCormick who assisted him faithfully and capably during many years.

Dr. Clinton was well known to arborists as a staunch supporter of the National Shade Tree Conference. He was Secretary-Treasurer of the Fifth Conference. He presented a paper entitled "Mechanical Injuries" at the First Conference. Two addresses, "Willow scabblight" and "Some effects of drought on shade trees," appear in the published proceedings of the Fifth and Seventh Conferences, respectively. He was a frequent and highly appreciated speaker at meetings of the Conecticut Tree Protective Association and was deeply interested in the growth and development of that society.

## Dollars Hang On Tree

GILLETTE, Wyo.—Harold Mankin, 11, saw a leather pouch hanging from a tree, and decided it would be good leather to make a sling-shot. He took it home, opened it and found several hundred dollars.


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## Filling Cavities

*(Continued from page 7)*

of keeping spore laden rain water from penetrating to the bottom of the split regardless of how perfectly the parts are drawn together, we must assume that decay will have established itself even though the wound heals perfectly and no further trouble is noted. But what about the crotch cavity where considerable tissue has already been destroyed by decay? Certainly there is far less chance for such a situation to callus over completely than as though the wound were of the simple type commonly known as a shiner cavity. Then too, what of the wound that runs into the ground such as a lightning scar? If the wound is very broad there is small chance of its closing before decay attacks and especially at ground level where air, water and soil combine to make conditions ideal for rapid decay.

Greensboro's former city park superintendent, Mr. R. G. Williams, who is an ardent supporter of leaving 'em open seemed to be of the opinion that it is best to leave things in such a way that the condition of the wound can be readily observed, since he felt that there was no telling what was going on behind some of the pretty fillings that looked so neat outwardly. That's all fine and dandy as the Fuller Brush man would say, but I would like to mention a theory of mine which I have found to be more or less corroborated in Felt and Rankins Insects and Diseases of Ornamental Trees and Shrubs, Page 97. I have noticed that when telephone poles are being replaced, the lower portion or butt of the pole which has been six or more feet underground and largely cut off from the air, is decayed very little if at all, whereas the portion at the ground level where air, soil and water mingle freely, decay had nearly consumed the pole. Another example can be found in examining lumber and noting how the spread of decay in knots seems to have been arrested as soon as the trees growth sealed the opening and cut off the supply of air. If it is necessary to prevent air from reaching the exposed wood tissues, there seems to be little room for doubt that sealing the wound with a filling is the only possible answer.

The one and only time that the writer has ever done any open cavity work was at the insistence of a client who has a northern home and who had been converted to open cavity work by a company who services his trees in Connecticut. Since he insisted that the cavities that we treated be left unfilled in spite of my protests, I disclaimed all future responsibility for the success of the work and went ahead. The job was done very conscientiously and considerable time was spent in smoothing up the wood surfaces

*Details of partly filled cavity. Completed section, beginning of new section, and brace rod are shown.*

perfectly before disinfecting and waterproofing was undertaken. Upon leaving the operation I made it a point to explain the absolute necessity of policing the work, but a year later when his attention was called to the need of repainting the cavities, procrastination emerged as the winner and the second year likewise. The war with its attendant shortage of manpower then put an end to my sales activities, so it is not at all difficult to guess what the result of leaving them open will be in this case, or as I see it in hundreds or even thousands of others where the arborist fails (through no fault of his own) to obtain the clients cooperation in doing the follow-up work so vitally necessary where the cavities are not filled. And I am sure no one will deny that we all have an abundance of non-cooperative clients in our files. I know of a very wealthy man near Winston Salem who patronizes a company that advocates open cavity treatment and have seen cavities on this place with the wood surfaces deeply cracked and scarcely a trace of the original pruning compound remained and although work had been done on parts of the estate every year or two, there seems to have been an astounding lack of follow-up work where it was needed most. The question in my mind is, just where has the owner of the property gained anything by the money he spent on this work?.

Another point or two that puzzles me is the manner in which the operator is going to repaint the interior of such cavities when the roll of callus has reach the stage, as it quckly would in long narrow cavities, where it would be difficult or even impossible to reach inside to remove the wet leaves and other trash that invariably collects in such places and expect to be able to do a good job of repainting, much less to have a clean dry surface on which to apply the paint. Then, too, as we all know, the average wound seems to heal far more rapidly during the first two or three years than it does thereafter, which in my opinion adds up to the fact that it is impractical to expect most large wounds, much less cavities to callus over perfectly before decay re-establishes itself or borers have cut through the painted surface and rendered its protection imperfect.

After all, the exponents of open and filled cavity technique can't both be right and for the good of everyone in the profession it behooves us to get together and arrive at a definite conclusion once and for all, whether TO FILL OR NOT TO FILL.

(Editor's Note: What is your opinion? Send it in and we will re-hash this interesting subject in forthcoming issues. Send pictures whenever possible.)

## Russians Growing Smooth Pine Trees

SALEM, Ore.—A method of growing pine trees which are free from knots discovered by Russian foresters, is reported by The Forest Log, publication of the Oregon State Board of Forestry.

Logs of 20 feet or more, completely without knots, can be obtained, the paper says, by allowing the small tree to develop a bushy growth near the ground until it is eight years old.

From then on, all branches budding out above this level are pinched off as soon as they are discovered. The lower bushy growth is sufficent for nourishment of the tree.

When it was tall enough to furnish a log 20 or so feet in length, a bushy top is allowed to develop on the tree, and it continues to grow. But no branches, and thus no knots, then develop in the middle space, leaving a stretch of smooth lumber.

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# Relation of Complete Facts to Diagnosis

*By* Hollis Howe
*City Forester, Baltimore, Md.*

Just as is the case in the practice of medicine, complete facts are indispensable to the accurate diagnosis of tree ailments. The medical doctor must ascertain certain information, sometimes embarrassing to the sensitive, in order to arrive at the cause of any severe complication.

A veterinarian will maintain that his is a more difficult problem than that of the practitioner who ministers to human ills, because the dumb creature he is called upon to treat cannot describe his feelings. How much more this is true with respect to trees and plants will be made manifest by prolonged practice. The tendency of some tree-owners to withhold certain facts, either deliberately or through thoughtlessness, may reflect on the ability of the arborist unless he is quite exhaustive in his search for clues.

Whether we realize it or not, most tree-men have a more or less definite routine that is followed in diagnosis. An outline of such a procedure has been most ably suggested by such authorities as Dr. P. P. Pirone in his book, "Maintenance of Shade and Ornamental Trees" (Oxford University Press) and Dr. D. S. Welsh, in the official organ of the National Shade Tree Conference, "Arborists' News" (Vol. VI., Page 18).

One noteworthy example should serve to illustrate the importance of complete information and show that it is not always readily obtainable. Even now, after two or three years, the solution to the particular problem involved would appear to be debatable.

The tree in question was a weeping willow, about ten inches in diameter and forty feet in height, that had been grown from a post-like cutting set at the end of a garden, the central feature of which was a modest pool surrounded by a grass area bordered with shrubs, perennials and annuals. Until now this tree had been a most important feature of the design.

The time was mid-summer and the tree was in full foliage, but the leaves were a deep tan. There was no indication of canker and the omnipresent borers did not occur in sufficent numbers to have caused the condition.

The inner bark was oxidized completely around the trunk. There was no proximity to a drain or gas line. The condition of the grass and other vegetation was normal. There had been no spraying done nor any fire nearby. Everything pointed to a faulty soil condition but no fertilizer, weed-killer or other "known" substance had been employed.

Anticipating a visit from a prominent plant pathologist, with whom many of the readers of "Trees" would be acquainted, on the following day, it seemed probable that an early solution to the problem would be forthcoming. The above-mentioned authority was at a loss to know the cause of failure, however, with the information at hand.

The lady who owned the tree, being an acquaintance of a sort desirable to please, a third visit was decided upon. She was a prominent garden club member and active in civic betterment work. She possessed an unusual sense of artistic appreciation, but the many demands on her time precluded the possibility of actual "dirt" gardening.

Upon close observation it was noted that the borders were indifferently planted, many species being repeated and apparently collected from kindly garden associates. They were accented with graceful vases, charming statuettes and interesting rock-specimens.

The well-designed pool had a pleasing outline and its coping was embellished with balanced potted plants. What had until now escaped observation was the fact that there were no fish or aquatic plants, but the water was clear. Its blue color, however, was not due to the pool's interior finish. Inquiry elicited the information that it had been common practice to place a quantity of laundry blueing in the water from time to time "to keep it clear." If this were not the cause of the trouble, it was at least under suspicion.

Upon inquiry at our municipal Bureau of Standards, it was advised that usually a certain proportion of oxalic acid is employed to stabilize solutions of ferric ferrocyanide as in laundry blueing; its lethal effect on all forms of plant and animal life involving dehydration, among other pathological processes which ensue. This information seemed pertinent, to say the least.

From another source giving patent formula for laundry blueing, the information was characteristically vague. The usual "for example" employed in the description disclosed the use of ammonium sulphate impregnated with a small percentage of "*acid* blue dye." The ammonium sulphate would appear to be beneficial to plant growth, perhaps.

Still another reference on dyes described commercial aniline blue dyes as a mixture so complex (tri-sulfonates of tri-phenyl para-rosanilin (C. I. 706) and di-phenyl rosanilin) that they should be

*(Continued on page 18)*

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# 'State Tree' Stamps Proposed For National Arbor Day

Philatelists who have learned of the recent proposal of the National Arbor Day Committee, to the Postmaster General of the United States, are very much enthused at the prospect of a new series of stamps depicting "state trees."

The suggestion was made that a series of five, or more, or less stamps, whatever would be the decision of the Postoffice Department, be issued each year, in the week in which National Arbor Day was observed, the last Friday in April.

This program would assure some splendid publicity for this significant day, which would be sustained for a number of years. The proposal has been placed before Mr. Robert E. Hannegan, newly appointed Postmaster General.

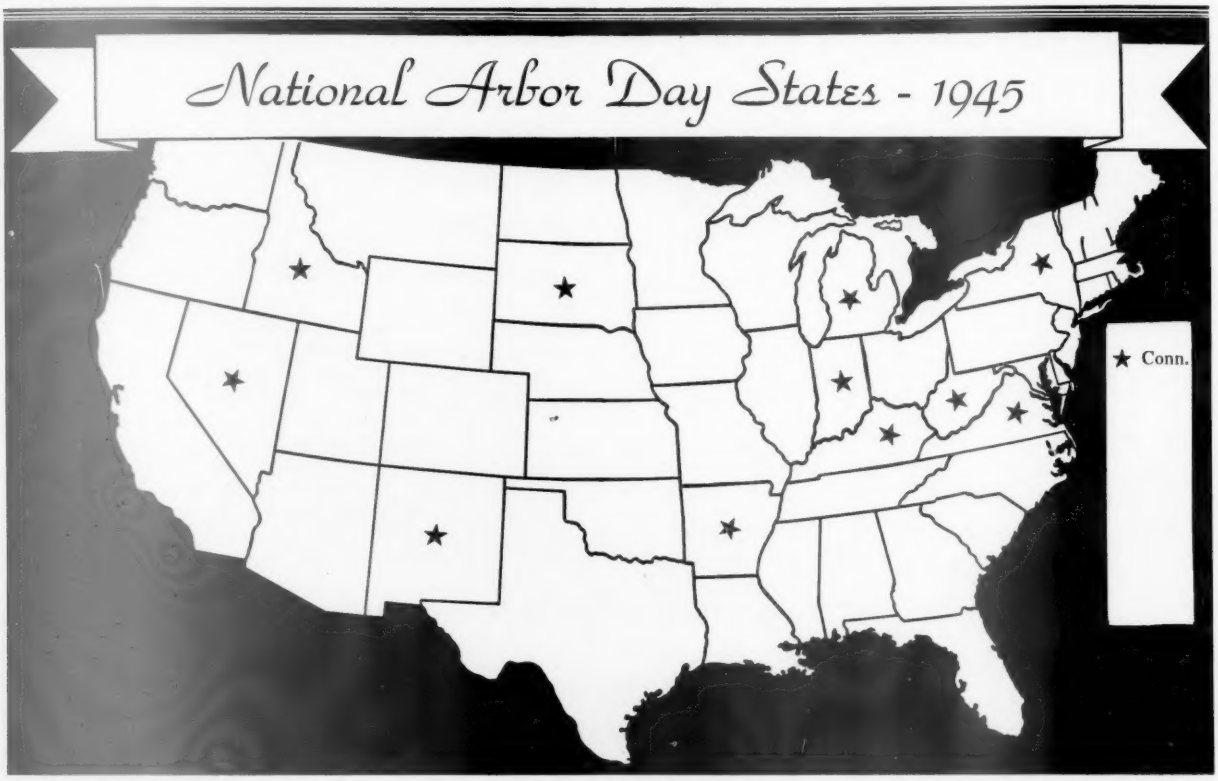
The response to the appeal for a unified observance of Arbor Day on the last Friday in April, made to the Governors of the states early this spring was very encouraging, and the possibilities for a much larger participation next year are very bright.

Eleven state Governors responded to the appeal for a unified Arbor Day sent out last spring by Dr. Richard P. White, executive secretary of the American Nurserymen's Association, Dr. L. C. Chadwick, executive secretary of the National Shade Tree Conference, Will O. Doolittle, evecutive secretary of the American Institute of Park Executives and Edward H. Scanlon, Editor of Trees Magazine. Judging from other letters received, next year should show a minimum of at least twenty-four states observing National Arbor Day on the last Friday in April.

The Governors and the states they enrolled under the National Arbor Day banner this year are; Gov. Colgate W. Darden, Virginia; Gov. Ben Laney, Arkansas; Gov. Harry F. Kelly, Michigan; Governor Raymond E. Baldwin, Connecticut; Gov. M. Q. Sharpe, South Dakota; Governor Ralph I. Gates, Indiana; Gov. John J. Dempsey, New Mexico; Gov. C. W. Meadows, West Virginia; Gov. E. P. Carville, Nevada· Gov. Charles C. Gossett, Idaho; Gov. Simeon S. Willis, Kentucky. Governor Thomas E. Dewey had already proclaimed the same date for the lower half of New York in advance of the appeal. In addition to this very encouraging response a number of other Governors expressed their approval of the movement and several indicated their willingness to effect a change of state statutes in order to conform in the future.

Here is a place where each of you readers can render a service to your profession and to yourself by helping in this effort to give horticulture one of its greatest boosts. Write your Governor today and ask him to respond to the next appeal to establish THE LAST FRIDAY IN APRIL as Arbor Day.

The possibilities for nation wide publicity that would result from a majority adoption by the states of a uniform date would be legion. The good that would accrue to America in the creation of a more tree-minded and beauty-minded people would be incalculable. You will be doing a fine service if you do your part in helping to establish this significant date. Write your Governor today and ask everyone you know to write him; your Chamber of Commerce; your Mayor, and as many of your clients and friends as you can contact. Drop a line to the Editor of Trees, if you are interested in engaging in this splendid movement for the advancement of trees.



# THRU *the* MICROSCOPE

By P. P. Pirone
*New Jersey Agricultural Experiment Station*

Lack of time and material precludes a detailed review of the scientific developments in many phases of Arboriculture. Hence this column is confined largely to recent work on tree diseases.

Arborists along the East coast are still faced with the Dutch elm disease problem. Although little has been said or written about it during wartime, the disease is still with us and continues as a major cause of death of many fine old elms. An important manner by which the causal fungus is spread is by means of scolytid beetles emerging from woodpiles. For those aborists who prefer to see pictures rather than read a lot of dry text and still get the idea on what its all about, I suggest the excellent bulletin by Rex and Middletown (1). For an additional material on the same disease, I refer readers to the article by Tyler (2) who reports that the air temperatures exert a marked influence on the development of the disease. Tyler's report, based on artificially inoculated potted elms shows that temperatures ranging from 15 to 29° C generally favor disease development whereas the disease was definitely retarded at temperatures ranging from 32 to 37° C or from 9.5 to 12° C.

While on the subject of elm diseases we must not overlook the even more destructive virus disease, phloem necrosis, which is prevalent in most states bordering the Ohio river basis. A preliminary report by Swingle et al, states that on the basis of resistance tests in progress since 1942, there is hope that certain elm seedlings and clones are resistant to phloem necrosis. They also report that some natural hybrids between *Ulmus fulva* and *U. pumila* seems to be resistant too. While this work is not conclusive it appears to offer a possible solution to a real knotty problem. Breeding and selecting for disease resistance involves long and painstaking work so our best wishes go to these U.S.D.A. researchers.

Incidentally arborists acquainted with him will be happy to hear that Dr. Curtis May has been placed in charge of shade tree research work for the U.S.D.A. I know of no better man who could have been picked for the job and I can predict (without taking much of a chance) that we can expect some good, sound, fundamental research from his department in the postwar period. As I see it, this appointment means that the "powers that be" in Washington now appreciate the fact that shade trees also belong in our national set-up.

Hypoxylon canker is the most important disease of poplar in the Lake states. An excellent paper on many phases of this disease is that by Gruenhagen (4). The causal fungus is primarily a wound parasite, that is, it enters most commonly through branch and trunk wounds. Because cankered trees in woods are a continual source of inoculum for any healthy poplars in the neighborhood, Gruenhagen suggests removal and burning of conkered trees where the value of the stand justifies the expense.

Still another grand American tree, the sugar maple, appears to be menaced by a fungus disease. This new disease, called "sapstreak" by Hepting (5) because it produces grey to red radial streaks and watersoaked areas in the wood, has been killing large numbers of sugar maples near Ashville, North Carolina. The causal fungus is known as *Endoconidiophora virescens* and is undistinguishable from the common sapstain fungus on hardwood lumber. How widespread the disease is, cannot be difinitely stated as yet. Hepting points out "Any disease that works so rapidly that a 20-inch tree can be killed in 3 years by (fungus) inoculations in three small holes in the trunk must be considered potentially dangerous." To this statement, Hepting's schoolmate from 'Far Above Cayuga's Waters' days says "Amen."

REFERENCES
1. N. J. Dept. Agr. (Trenton) Circ. 346. 1944
2. Phytopath. 35 (No. 5) 302. 1945.
3. Phytopath. 35 (No. 6) 489. 1945.
4. Phytopath 35 (No. 1) 72. 1945.
5. Phytopath 34 (No. 12) 1069. 1944.

## A Cubic Inch of Wood

Dr. Carl C. Forsaith of the New York State College of Forestry, Syracuse University, gives some astonishing facts about wood. A cubic inch of white pine, weight for weight, is stronger than common steel. When it is air dried it will support the weight of nearly 2½ tons lengthwise of the grain, although three-quarters of its volume is air.

The block contains between four and five million cells of a certain type called "tracheids."

If placed end to end these cells would reach more than ten miles. White pine has three other kinds of cells. Organic matter constitutes approximately 99 per cent of the wood. Also there is to be found in it one-third of all known elements. Less than one per cent is mineral matter and that is what is left in ash when the wood is burned. This comes from the soil.

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## Books--Authors

**The following books may be ordered from TREES Magazine, Box 886, Santa Monica, California.**

GARDEN ISLANDS OF THE GREAT EAST. David airchild. Charles Scribner's Sons, New York. 23 pages, illus. $3.75.

Reviewing this interesting book of Dr. Fairchild's was accomplished at odd moments lying on the flight deck or "fantail" of a "jeep" aircraft carrier down in the South Pacific, close to the scene of the story.

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DISEASES AND PESTS OF ORNAMENTAL PLANTS. B. O. Dodge and H. W. Rickett. Jacques Cattell Press, Lancaster Pa. 638 pages, illus. $6.50.

This book covers too broad a field to be very specific and for that reason its value to the professional is doubtful. You can recommend it to clients for general problems that affect the small garden.

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ILLUSTRATED FLORA OF THE PACIFIC STATES. (Vol. II) Leroy Abrams. Stanford University Press, Palo Alto, Calif. 635 pages, illus. $7.50.

The second in a series of four volumes indexing the plants of the western states, Washington, Oregon and California. This monumental work has gone forward despite the war and represents the results of Dr. Abrams forty years of study of western botany. It is invaluable to any plantsman on the west coast.

---

PATHOLOGY IN FOREST PRACTICE. D. V. Baxter. John Wiley & Sons, Inc., New York. 618 pages, illus. $5.50.

An innovation in Forestry publications is the 98 page chapter devoted to the "relation of site and care of shade and park trees to disease incidence."

In addition to this chapter the book contains much up to date material of value to the arborist. Its emphasis on site and soil in their relation to disease makes it a valuable reference for ornamental tree men.

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## Shade Tree Work For Vets

A leaflet published by the National Arborists Association at Wooster, Ohio, is designed briefly to inform veterans of the healthful and interesting possibilities of Arboricultural work. It mentions the various phases of tree treatment; is nicely illustrated, and is being distributed by members of the Association. Copies may be obtained from Dr. Paul E. Tilford, Secretary.

## Facts In Diagnosis

*(Continued from page 15)*

regarded as a group whose composition varies and there is no method of controlling the process of manufacture to yield a constant product. The particular mixture involved in the case under diagnosis may even have carried some coal tar product quite toxic to trees, but this seems somewhat doubtful.

It is advised that Prussian blue, as such, is neutral and not easily hydrolized. As a mater of fact, it has been used to produce tinting in certain perennials.

Therefore it would seem that the trouble would be due to the *acid* of the "acid blue dye" and that the toxic properties of oxalic acid, even in comparative-period of time was the direct cause of the death of the tree in question. The fact that the grass and other plants were not immediately affected was due to the depth at which seepage from the pool took place. Few masonry or even concrete pools are water-proof. If a steel tank had been used, the damage would doubtless not have occurred.

It will be remembered that the tree was of good size—ten inches by forty feet. The concentration of toxic material could become considerable over the several years necessary to produce a tree of this size.

Some may be in disagreement as to the probability of the foregoing solution being the correct one. At any rate, it is believed that the need for complete facts for accurate diagnosis has been demonstrated.

## Five Trees Vying For 'State Tree' Honor

LINCOLN, Neb.—The "tree situation" in Nebraska, home of the Arbor Day movement, suddenly has become acute.

At present, five trees are in the running for the title of "state tree," and new entries may appear at any time. Only two species, however, the hackberry and the cottonwood, have been proposed in the State Legislature as candidates for the honor.

It all began recently when Sen. Charles Tvrdik, Omaha, discovered that Nebraska, then officially nicknamed "tree planter," had no state tree. To correct this deficiency, he modestly introduced a bill to designate the hackberry as such.

"We don't like it!" was the immediate reaction of State Agricultural College officials and tree enthusiasts.

The cottonwood quickly was suggested by Extension Forrester Earl G. Maxwell, who asserted it is "head and shoulders" above all other trees in the state. Sen. Ernest C. Raasch, Norfolk, then proposed a bill to name the cottonwood the state tree.

Advice to the solons poured in. Three additional possibilities—the American elm, the Virginia juniper and the red cedar—have been suggested, but have not been presented for legislative consideration.

The healthy Nebraskan respect for pioneers and the past has been capitalized upon by cottonwood devotees, who assert their tree is older in the state, and is "symbolic of pioneer life."

That claim is vigorously disputed. Say, the hackberrites, backed by paleontologists at the University of Nebraska, "the hackberry trees were the first to come back after the glaciers of prehistoric times receded, as the presence of petrified seeds indicates."

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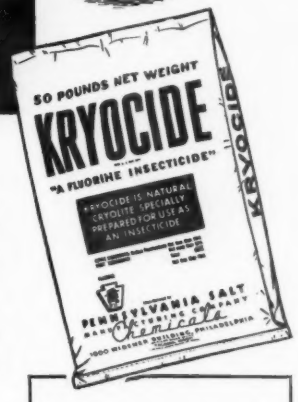


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